A nested case-control study of esophageal and stomach cancers in the Linxian nutrition intervention trial

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Abstract: **BACKGROUND**. Rates of oesophageal/gastric cardia cancer in Linxian, a rural county in north central China, are among the world's highest, but the risk factors are not well understood. **METHODS**. A nested case-control study of oesophageal and stomach cancers was conducted within a cohort of 29,584 adults who participated in a randomized nutrition intervention trial. Information on participant characteristics collected during interviews before the trial began was compared between individuals who subsequently developed cancers of the oesophagus (N = 640) or stomach (N = 539), mainly cardia, and individually matched controls (control/case ratio = 5). Analyses were performed separately for oesophageal and stomach cancers using conditional logistic regression. **RESULTS**. For oesophageal cancer, tobacco smoking was associated with a significantly elevated risk, with a twofold increase among long-term smokers. Alcohol consumption was uncommon and not related to risk. High consumption of eggs or fresh vegetables was associated with 20% reductions in risk, and risk significantly declined as pre-trial body mass index (BMI), an indicator of long-term nutritional status, increased. No increases in risk were associated with intake of pickled vegetables or mouldy foods, although consumption levels at the start of the trial were low. Excess risks of 40-80% were found among individuals who had reported a history of cancer, notably of the oesophagus and stomach, in parents or sibs. For stomach cancer, only low BMI was significantly associated with elevated risk. CONCLUSIONS. This study indicates that several risk factors for oesophageal and stomach cancers in Linxian, including smoking, nutritional deficiency, and familial cancer occurrence, resemble those in other areas of the world and contribute partly to the remarkably elevated rates in this area of China.